

REMARKS**In the Drawings:**

The Examiner objected to the drawings as failing to comply with 37 CFR 1.84(p)(5). The Examiner asserted that the reference number 222 was present in the drawings but not mentioned in the description. Applicants point out that reference number 222 is mentioned in the description at the first sentence of paragraph [0017] as it was originally filed, as well as in the amended paragraph. Withdrawal of the objection is requested.

In the Specification:

The Examiner objected to the drawings as failing to comply with 37 CFR 1.84(p)(4). The Examiner asserted that reference number 220 was used to designate both structural layer and conductive traces. Applicants have provided a replacement, amended paragraph [0017] of the specification to rectify this error.

In the Claims:

Claims 3-9 and 15-26 remain in this application. Claims 3 and 7-9 have been amended. Claims 1, 2, and 10-14 have been canceled. New claims 24-26 have been added.

Rejections Under 35 U.S.C. 112:

Claims 10 and 21 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claim 10 has been canceled.

The Examiner asserted that there is insufficient antecedent basis for the term "woven fiberglass bundles" in claim 21. Applicants disagree. Claim 20, from which claim 21 depends, recites, "a plurality of fiberglass bundles." Claim 20 further recites, "weaving the

plurality of fiberglass bundles into a structural fabric.” Together, the two limitations from claim 20 provide antecedent basis for the term “woven fiberglass bundles” because after weaving the fiberglass bundles into the structural fabric, they are clearly “woven fiberglass bundles” as recited in claim 21.

Rejections Under 35 U.S.C. 102(b):

Claims 1-10, 15 and 17-23 were rejected under 35 U.S.C. 102(b) as being anticipated by Wiener (U.S. Patent No. 5,524,679) (hereinafter “Wiener”).

Claim 3:

Claim 3, as amended, recites a first woven layer, a second woven layer and an optical fiber sandwiched between the two layers. Figure 3c illustrates this arrangement prior to assembly, with the fiber 304 between two woven layers 314, 316. Figure 3e illustrates this arrangement after the fiber 304 has been sandwiched between the two layers 314, 316.

Wiener fails to disclose such an arrangement. Rather than disclosing an optical fiber between two different woven layers, Wiener merely discloses an optical fiber that woven into a layer; the optical fiber of Wiener is part of a woven layer.

Claims 4-6 depend from claim 3. Wiener also thus fails to disclose all limitations of claims 4-6.

Claim 7:

Claim 7, as amended, recites that the optical fibers are woven in two orientations, with some optical fibers having an orientation about 90 degrees to other optical fibers.

Wiener fails to disclose such an arrangement. Rather, Wiener teaches that it is important to avoid using optical fibers with such orientations. Wiener discloses that all of the optical fibers should be in a single orientation.

Under Wiener's teaching, one of skill in the art would not form a circuit board with optical fibers of such different orientations. Rather, Wiener teaches that it is important that the optical fibers are in a single orientation, with "zero degree warp" or "zero warp" (Wiener, col. 2, lines 40-42; col. 5, lines 9-12). This means the optical fibers are straight and parallel and avoids bends or crimps in the optical fibers (Wiener, col. 5, lines 9-16). It would not be possible to weave together fibers in both the warp and woof directions and maintain the optical fibers straight and parallel, without bends or crimps. Thus, as Wiener does not disclose all limitations of claim 7, and instead teaches away from claim 7, the rejection should be withdrawn.

Claim 8:

Claim 8, as amended, recites a layer is formed of woven fiberglass bundles and that the optical fiber is woven into the layer as part of one of the bundles. As described in the specification at paragraphs [0035] through [0037] and illustrated in Figures 4a, 4b, and 4c, a bundle has multiple fibers and the bundle is woven into a fabric rather than a single strand. Wiener fails to disclose weaving bundles, at least one of which includes an optical fiber, to form a layer.

Wiener, in contrast, only discloses optical fibers separate from the other fibers of a layer in special "channels" between the other fibers (*see*, Wiener, col. 2, lines 38-40; col. 7, lines 11-13; Figures 1, 3-8) and are thus segregated from the other fibers. As claim 8 recites the optical fiber is woven into the layer as part of a bundle of fibers and Wiener only discloses optical fibers as segregated from structural fibers in a layer, Wiener does not disclose all limitations of claim 8.

Claim 9 depends from claim 8. Wiener also thus fails to disclose all limitations of claim 9.

Claim 15:

Claim 15 recites forming a stack that includes first and second layers and a pattern of optical fibers between the first and second layers. Figure 3c illustrates such a stack prior to assembly, with the fiber 304 between two woven layers 314, 316. Figure 3e illustrates such a stack after the fiber 304 has been sandwiched between the two layers 314, 316. Wiener fails to disclose such an arrangement.

Rather than disclosing an optical fiber between two different woven layers, Wiener merely discloses an optical fiber that is part of a woven layer. While the Figure 1 of Wiener shows optical fibers 12 between strands 10, a strand is not a woven layer. A woven layer includes many strands (or fibers) woven together. The optical fibers 12 of Wiener are woven with strands to become part of a single layer; Wiener fails to disclose an optical fiber between two different woven layers. Thus, the cited art fails to disclose all limitations of claim 15 and the rejection should be withdrawn.

Claims 17 and 18 depend from claim 15. Wiener also thus fails to disclose all limitations of claims 17 and 18.

Claim 19:

Claim 19 recites that the optical fibers are in a grid pattern. As stated above with respect to claim 7, Wiener fails to disclose optical fibers in a grid pattern because Wiener teaches that all fibers should be oriented in the same direction.

Claim 20:

Claim 20 recites forming fiber bundles with structural fibers, at least some of which comprise an optical fiber. These bundles are woven into a structural fabric. Wiener fails to disclose forming bundles that contain optical fibers, and weaving these bundles into a fabric. Wiener, in contrast, only discloses keeping optical fibers 12 separate from the other fibers 10,

11 of a layer by keeping the optical fibers 12 in special "channels" between the other fibers (*see*, Wiener, col. 2, lines 38-40; col. 7, lines 11-13; Figures 1, 3-8). Thus, as Wiener fails to disclose all limitations of claim 20, the rejection should be withdrawn.


Claims 21-23 depend from claim 20. Wiener also thus fails to disclose all limitations of claims 21-23.

Rejection Under 35 U.S.C. 103(a):

Claim 16 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wiener in view of Petrisko et al. (U.S. 5,851,403) (hereinafter "Petrisko"). Claim 16 depends from claim 15. As stated above, Wiener fails to disclose all limitations of claim 15. Petrisko fails to rectify this deficiency.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION
(37 C.F.R. § 1.8(a))

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